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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RAO, MANJUNATH N	
ART UNIT	**PAPER NUMBER**
1652	4

DATE MAILED: 05/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No.	Applicant(s)	
	09/816,825	BISTRUP ET AL.	
	Examiner	Art Unit	
	Manjunath N. Rao, Ph.D.	1652	

-- The MAILING DATE of this communication appears on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *1* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claims 30-56 are pending and now under consideration in this application.

Drawings

Drawings submitted in this application are accepted by the Examiner for examination purposes only.

Claim Objections

Claims 37-42, 44-50, 55-56 are objected to because of the following informalities: Claims 37-42, 44-50, 55-56 recite the enzyme as glycosyltransferase-3 while other claims recite the enzyme as glycosyl sulfotransferase-3. Examiner requests applicants to maintain uniformity to reduce ambiguity. Appropriate correction is required.

Sequence Compliance

Applicant is required to comply with the sequence rules by inserting the sequence identification numbers of all sequences recited within the claims and/or specification. It is particularly noted that have not provided the SEQ ID NO for those sequences disclosed in Figures 2-4 and 6 and on page 38. See particularly 37 CFR 1.821(d).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 31, and claims 32 to 36 which depend from claim 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 31 recites the phrase "under stringent conditions". The metes and bounds of the above phrase is not clear to the Examiner. It is well known n the art that "stringent conditions' can be either low or medium of highly stringent with different sets of buffers and hybridization conditions defined. A perusal of the specification does not yield a specific definition for the above phrase either, thus rendering the claim indefinite.

Claims 36, 50 and 54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 36, 50 and 54 recite the phrase "substantially free of other proteins". The metes and bounds of the phrase "substantially free" is not clear to the Examiner. It is not clear to the Examiner as at what level of contamination with other proteins, do the applicants consider that the said protein is "substantially free" of other proteins. A perusal of the specification does not yield a specific definition for the above phrase either, thus rendering the claim indefinite.

Claim Rejections - 35 USC § 101

Claims 30, 37-53, 55 and 56 are rejected under 35 U.S.C. 101 because 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 30, 37-53, 55 and 56 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

The applicant has asserted only generalized utilities such as research applications, diagnostic applications, therapeutic agent screening/discovery/preparation applications as well as therapeutic compositions (see pages 12-30). Applicant lists a large number of disease conditions which can be treated with either the polynucleotides, antisense sequences, polypeptides or compounds which modulate the polypeptide etc. However, applicants do not identify even a single specific disease that can be treated using any of the above so called agents or more specifically the polynucleotides claimed in the above claims. Therefore, the asserted utility are not specific and substantial. The broadly claimed polynucleotides and fragments of polynucleotides is based on SEQ ID NO:1. Other than the polynucleotide sequence, SEQ ID NO:1, and the amino sequence that is encoded by the polynucleotide as set forth in SEQ ID NO:2, the specification provides little functional characterization of this polynucleotide. The specification also lists a general use for the polypeptides encoded by the polynucleotide with SEQ ID NO:1, however, there is no information that links the use of the polynucleotide with SEQ ID NO:1 and its fragments to any specific disease state. Thus the asserted utility of the claimed polynucleotides and its fragments is not substantial or specific. Further, while the specification discloses that SEQ ID NO:1 and its fragments will be used to generate probes, that is not a utility specific to the claimed polynucleotide sequence.

Claims 30, 37-53, 55 and 56 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a credible asserted utility or a

well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Applicant is referred to the revised interim guidelines concerning compliance with utility requirement of U.S.C. 101, published in the Official Gazette and also available at www.uspto.gov.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 30-56 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for DNA with SEQ ID NO:1 encoding a full length polypeptide with SEQ ID NO:2 having glycosylsulfotransferase activity, does not reasonably provide enablement for any DNA including variants, mutants and recombinants which are fragments of SEQ ID NO:1 encoding either a fragment of amino acids of SEQ ID NO:2 without any catalytic activity but exhibits sulfate donor or sulfate acceptor sequences. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required, are summarized in In re Wands (858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988)) as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the

prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claim(s).

Claims 30-56 are so broad as to encompass any DNA which are fragments of SEQ ID NO:1 including variants mutants and recombinant fragments, and vectors and host cells comprising such DNAs and method of making the fragments of peptides encoded by said DNA. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of DNA sequences that are broadly encompassed by the claims.

The applicants propose to use the above polynucleotides for a variety of processes such as recombinant protein preparation (whose use is not known), as hybridization probes, and research applications, diagnostic applications, therapeutic agent screening/discovery/preparation applications as well as therapeutic compositions (see pages 12-30). The nucleotide sequence determines the type of protein and the ultimate function of the encoded protein and only nucleic acids which encode a polypeptide with a specific activity can be envisioned as having any use. However, fragments of nucleic acid encoding a polypeptide without any utility as claimed by the applicants will not indicate to those skilled in the art as to its usefulness. This is because applicants have not provided any credible asserted utility or a well established utility for the claimed polynucleotides or the polypeptides encoded by the polynucleotides.

The specification does not support the broad scope of the claims which encompass the use of fragments of any DNA with SEQ ID NO:1 or any DNA that hybridizes to SEQ ID NO:1 under stringent conditions because the specification does not establish: (A) regions of the DNA sequence which may be modified without effecting the above mentioned activity/utility; (B) the

general tolerance of SEQ ID NO:1 DNA sequence to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying SEQ ID NO:1 with an expectation of obtaining the desired biological function and utility; and (D) the specification provides insufficient guidance as to how and for which specific purpose the claimed DNA can be put to use.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including any DNA fragment of SEQ ID NO:1 including those hybridizing to SEQ ID NO:1. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of the use of the claimed DNAs is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See *In re Wands* 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

Claims 30-56 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. These claims are directed to a genus of DNA molecules which are fragments of SEQ ID NO:1 encoding fragment of SEQ ID NO:2 or those which hybridize to SEQ ID NO:1 under stringent conditions.

The specification does not contain any disclosure of the function of all DNA sequences encompassed by the claims or the amino acid sequences encoded by said DNA sequences. The

genus of DNAs that comprise these above DNA molecules is a large variable genus with the potentiality of having different functions. Therefore, many functionally unrelated DNAs are encompassed within the scope of these claims, including partial DNA sequences. The specification discloses only a single species of the claimed genus which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

Applicant is referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 45-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aparicio et al. (PIR Database, Accession NoT30228, and Gene, Vol. 169:9-16, 1996) in view of Sambrook et al. (Molecular Cloning, A Laboratory Manual, 2nd Ed, ColdSpring Harbor Laboratory Press, 1989). Claims 45-50 in this instant application are drawn to the nucleic acid encoding the peptide VRYEDL, an expression vector comprising said nucleic acid, a host cell prokaryotic or eukaryotic transformed with said vector and a method of making said peptide by growing the

host cell to express and isolate said peptide. Aparicio et al. teach the polypeptide comprising said peptide. The reference also teaches that said peptide is a fragment of a carrier protein. However, the reference does not teach exclusively the fragment or nucleic encoding the same.

Sambrook et al. teach in general recombinant methods of converting the peptide sequence into DNA sequences, subcloning such DNA into a vector and transforming host cells and culture said host cells such that the peptide or polypeptide are expressed.

With the above two references in hand it would have been obvious to one of ordinary skill in the art interested in making the peptide fragment by recombinant method as opposed to a synthetic method to make a nucleic acid construct, transform a cell line and express the peptide in very many ways. One of ordinary skill in the art would have been motivated to do so as Aparicio et al. teach that said peptide is a fragment of a carrier protein and using such fragment one of ordinary skill in the art can raise specific antibodies for the same. One of ordinary skill in the art would have a reasonable expectation of success since Aparicio et al. teach the fragment and also teach that it is a fragment of a carrier protein and Maniatis et al. teach the methods that has been largely followed to subclone and express a number of peptides and polypeptides.

Therefore the claimed invention would have been *prima facie* obvious to one of ordinary skill in the art.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 30-56 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,265,192. An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim is not patentably distinct from the reference claim, because the examined claim is either anticipated by, or would have been obvious over the reference claim. See, e.g., *In re Berg*, 140 F.3d 1428,46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi* 759 F.2d 887,225 USPQ 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other. Claims 30-56 of the instant application and claims 1-6 of the reference patent are both directed to polynucleotides with SEQ ID NO:1 including variants mutants, recombinants and fragments of the same. A good number of different fragments of

DNA claimed in the instant application and in the DNA in the reference patent are identical to one another. The portion of the specification (and the claims) in the reference patent that supports the recited polynucleotide includes several embodiments that would anticipate the fragments (i.e., fragments encoding peptides with or without any activity) claimed in claims 30-56 herein. Claims of the instant application listed above cannot be considered patentably distinct over claims 1-6 of the reference patent when there is specifically recited embodiment that would anticipate mainly claims 30-56 of the instant application. Alternatively, claims 30-56 cannot be considered patentably distinct over claims 1-6 of the reference patent when there is specifically disclosed embodiment in the reference patent that supports claims 1-6 of that patent and falls within the scope of claims 30-56 herein because it would have been obvious to one having ordinary skill in the art to modify claims 1-6 of the reference by selecting a specifically disclosed embodiment that supports those claims. One of ordinary skill in the art would have been motivated to do this because that embodiment is disclosed as being a preferred embodiment within claims 1-6 of the reference patent.

Claims 30-56 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 5-10 and 12 of U.S. Patent Application No. 10/007262, published as US 2002/0164748 A1. An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim is not patentably distinct from the reference claim, because the examined claim is either anticipated by, or would have been obvious over the reference claim. See, e.g., *In re Berg*, 140 F.3d 1428,46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed.

Cir. 1993); *In re Longi* 759 F.2d 887,225 USPQ 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other. Claims 30-56 of the instant application and claims 5-10 and 12 of the reference patent are both directed to polynucleotides with SEQ ID NO:1 including variants mutants, recombinants and fragments of the same and methods of making the encoded peptides. A good number of different fragments of DNA claimed in the instant application and the DNA in the reference publication are identical to one another. The portion of the specification (and the claims) in the reference application that supports the recited polynucleotide includes several embodiments that would anticipate the fragments (i.e., fragments encoding peptides with or without any activity) claimed in claims 30-56 herein. Claims of the instant application listed above cannot be considered patentably distinct over claims 5-10 and 12 of the reference application when there is specifically recited embodiment that would anticipate mainly claims 30-56 of the instant application. Alternatively, claims 30-56 cannot be considered patentably distinct over claims 5-10 and 12 of the reference application when there is specifically disclosed embodiment in the reference application that supports claims 5-10 and 12 of that patent and falls within the scope of claims 30-56 herein because it would have been obvious to one having ordinary skill in the art to modify claims 5-10 and 12 of the reference application by selecting a specifically disclosed embodiment that supports those claims. One of ordinary skill in the art would have been motivated to do this because that embodiment is disclosed as being a preferred embodiment within claims 5-10 and 12 of the reference application.

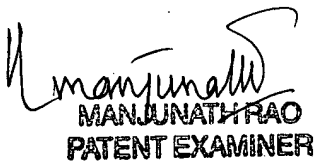
Conclusion

None of the claims are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manjunath N. Rao, Ph.D. whose telephone number is 703-306-5681. The examiner can normally be reached on 7.30 a.m. to 4.00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy can be reached on 703-308-3804. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4242 for regular communications and 703-308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0196.



Manjunath N. Rao Ph.D.
May 2, 2003